In the Abstract:

Sound processing systems have been developed that create a surround effect without quality degradation experienced by known sound processing systems in non-optimum listening environments. The sound processing systems may include matrix decoding systems that manipulate input signals prior to converting them into a number of output signals so that the output signals are a function of a greater number of input signals. These sound processing systems may also or alternately include a ~~base~~ bass management system that from the input signals preserves the low frequency components of the input signals in separate channels. Both the matrix decoding systems and ~~base~~ bass management systems may also produce additional signals. Further, the matrix decoding and ~~base~~ bass management systems may be implemented separately or jointly in vehicular sound systems.